Calum Murray

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Engineering Science student with a proven track record of software success. Seeking high-impact roles with significant technical challenges. Interests include algorithms, distributed systems, control theory, and the intersection of hardware and machine learning.

Education

2020 – 2025: University of Toronto, BASc in Engineering Science ECE Option. CGPA: 3.78, Dean's Honour List every term.
Relevant Courses: *Year 1:* Algorithms and Data Structures, *Year 2:* Digital and Computer Systems, Probability and Statistics, *Year 3 Fall:* Foundations of Computing, Computer Organization, Introduction to Machine Learning, *Year 3 Winter:* Introduction to Artificial Intelligence, Introduction to Control Theory, Systems Software, Computer Networks I.
2016 – 2020: St. Michael's Choir School, High School Diploma, Certificate of Bilingual Studies (Extended French).

Experience

Software Engineering Intern at Red Hat | May 2023 – Present

- Contributing to KNative, working primarily on cloud event discovery, and TLS.
- Working on Research project to reduce network hops into and out of Apache Kafka.
- Added support for custom Kafka Topic templates on Brokers and Channels.

Full Stack Engineer at LiteFarm | May 2022 – September 2022

- Migrated the CI/CD pipeline from TeamCity to GitHub Actions, resulting in a 30% speed increase and improved developer visibility.
- Reverse-engineered the file type to control Variable Rate Centre Pivot Irrigation equipment, enabling LiteFarm to generate these files for users programmatically.
- Architected and implemented LiteFarm's first integration with external hardware. This brought IoT insights to users by allowing them to configure sensors installed at their farm, which were then synchronized through the manufacturer's API.
- Redesigned and refactored the notifications system to make it more flexible, allowing other developers to generate notifications related to more diverse resource types and with more varied inputs.
- Researched, proposed, and implemented Isomorphism into the codebase, enabling shared logic between the client-side and server-side code.
- Improved the efficiency and accuracy of the algorithm used to generate farm biodiversity insights.

Junior Software Engineer at JMA Consulting | May 2021 – September 2021

- Designed, developed, and tested a Wix Application using React and Node.js to allow charities to generate and distribute Canada Revenue Agency-compliant receipts whenever a donation is made on their site.
- Programmatically generated PDFs of the receipts and sent them to the purchaser using AWS SES.

Junior Software Developer at JMA Consulting | June 2020 – September 2020

- Developed and published a popular Flutter package at https://pub.dev/packages/date_range_form_field (in the 89th percentile for popularity as of February 2023).

Volunteering

Tech Team Co-Lead for Orientation Week | May 2022 – September 2022

- Coordinated with my Co-Lead to plan work for members of the team.
- Mentored team members in learning web technologies and frameworks, including React, Express.js, and MongoDB.
- Re-architected the backend server, enabling it to support more complex use cases than were possible in the past, such as scheduled emails and real-time leaderboards.

Cannonball Webmaster | October 2021 – March 2022

- Developed all aspects of an eCommerce website to sell tickets for UofT Engineering's annual dinner dance, the Cannonball. This website handled over $50k in transactions, including over $14k in 45 minutes.

Tech Team Member for Orientation Week | May 2021 – September 2021

- Developed a discord in Python to support high-throughput picture and video uploads and judging for the Scavenger Hunt.
- Led the development of a cross-platform application in Flutter/Dart, which was published to the App Store (the Google Play store review took too long). The app allowed Frosh to see what activity they had on their current and upcoming schedule and provided a QR code which leaders could scan in the app to sign in the Frosh. This QR code sign-in reduced the sign-in time by over 50% compared to previous years.

Skills

Programming Languages: Python, C, JavaScript, TypeScript, Java, Golang, Dart, Verilog, ARM, Rust.
Frameworks: React, Express, Flutter.
Databases: MySQL, PostgreSQL, Redis, MongoDB
Cloud: Kuberenetes, KNative